

**Technical Work Group
of the Imperial Valley Study Group
Minutes of March 31, 2005 Meeting**

Members Present: David Barajas, Mark Etherton, IID; John Kyei, CA ISO; Jose Santamaria, CFE; Jonathan Woldemariam, Dave Miller, SDG&E; Phillip Leung, SCE; Dale Stevens, MidAmerican Energy; Ann Finley, MWD; Barrie Kokanos, APS; Dave Olsen, CEERT/CEC. Also Attending: Jim Kritikson, for Coral Power; Mike Evans, Shell Gas & Trading. The meeting convened at 10:30 AM. Minutes were recorded by Dave Olsen.

Dr. Mohan Kondragunta of SCE will begin participating in the TWG; he will be added to the distribution list.

WECC Membership: All participants confirmed that they/their organizations are WECC members and/or have confidentiality agreements with the WECC in place. The CEC will formally notify IID that Ron Davis and Dave Olsen are covered by the CEC's membership in the WECC.

Collector System: IID has developed the conceptual design of a 230 kV collector system capable of connecting ten 200 MW geothermal plants at the Salton Sea to its Midway and Banister substations. IID tested this design in the current power flow runs (including N-1 outages) to confirm that it does carry 2,000 MW of power.

Review of the Study Alternatives Against the Heavy Summer Base Case: Mark Etherton led the review of the power flow runs performed on the study alternatives. All seven study alternatives (Alternatives 1, 2, 3a, 3b, 4a, 4b and 5) are entered into the 2014 Heavy Summer Rev4 Base Case (but are turned off in the base case). Given the two dispatch schedules, 14 cases were run for the Heavy Summer analysis. Mark/IID prepared power flow maps, difference maps, and flow summaries for N-0, N-1 and N-2 outages for all 14 cases.

In summary, all the study alternatives are capable of carrying 2,000 MW of power from the IID system to delivery points on surrounding systems. Flows are spread quite evenly around the region. The only problems observed are at the Miguel, Mirage, Sycamore and (SCE) Valley substations. **Each TO must now look closely at delivery problems on its system** caused by the incremental flows from the new IV generation. The only no-solves were for IV-Miguel, and then mainly in Dispatch 1 (with 1,000 MW scheduled to SDG&E); Dispatch 2 caused IV-Miguel to overload in only a few cases. SDG&E must look more closely at IV-Miguel to determine if RAS is needed.

Alternatives selected for further study: After discussion, the group eliminated Alternatives 1, 3a, 4a, 4b, and 5 from further study; none of these routings are necessary to export 2,000 MW of geothermal power from the Imperial Valley region. The remaining study Alternatives are:

- **Alternative 2** (500 kV line from IV to San Diego Central, with 50% series compensation from San Felipe-Central).
- **Alternative 2a** (same as Alt 2, but with 230 kV tie to Palo Verde-Devers 1 at a new Indian Hills substation).
- **Alternative 3b** (500 kV line from IV to San Diego North, with 50% series compensation from San Felipe-North).

Light Autumn Cases: John Kyei/CA ISO to stress Light Autumn Rev2 with higher flows on Hassayampa-N. Gila and Palo Verde-Devers 1&2 (instead of looking at EOR in totality), send to SCE, by COB April 1. Phil Leung and Mohan Kondragunta/SCE will review the revised Light Autumn base case and send to Mark Etherton, by COB April 4. For the Light Autumn cases, Dispatch Schedule 2 will send 1,000 MW of geothermal generation to SCE (reducing the amounts scheduled to PG&E, WAPA and NPC).

Deliverability to Load Centers: Now that flows at major interconnection points are identified, SDG&E and SCE must determine any network upgrades necessary on their systems to make the geothermal power deliverable to their load centers.

Study Schedule:

- By April 11: Mark Etherton/IID will complete power flow runs on the six Light Autumn cases.
- April 12: TWG reviews results of the six Light Autumn power flow runs (morning). The Study Group meeting that afternoon will adopt a limited set of final alternatives for further study.
- By May 12: Stability analysis on the final alternatives (including the IID collector system) to be completed.
- By May 30: Transmission cost estimates and production simulations/economic evaluation to be completed.
- June 30: Final recommended transmission plan due.

Next Meetings:

April 7, 2005, 3:00 PM Pacific time: Conference call. The call-in number is 800-749-1988; passcode 655316. We will plan our April 12 presentation to the full Study Group on this call.

April 12, 8:30 AM-12:30 PM, at Sempra, San Diego. Review Light Autumn cases.

Full Study Group: April 12, 2005, 1:00-3:30 PM, at Sempra, San Diego. Adopt final cases for further study.

The meeting was adjourned at 3:30 PM.